

ABSTRACT OF THE DISCLOSURE

A high-strength bolted connection structure for realizing a steel structure with no fire protection are provided., The structure is capable of adequately assuring high-temperature strength of 650°C, and which does not depend on a fire protection or protective structure using fire resistant material. In particular, ultra-high strength bolts having excellent fire resistance and excellent resistance to delayed fracture can be used, which belt have a tensile strength at room temperature of 1200 N/mm<sup>2</sup> or higher, and satisfy the relation that the sheer proof stress at high temperature of 650°C is not less than (coefficient of slip at room temperature × design bolt tension)/ (safety factor for long term load × cross-sectional area of bolt shank).